NEW YORK UNIVERSITY

NATIVE WOODLAND GARDEN in SCHWARTZ PLAZA

PLANT FIELD GUIDE

Robert M. Clark
FOREWORD

The NYU Native Woodland Garden in Schwartz Plaza

On September 12, 1609, Henry Hudson first laid eyes on the island of Mannahatta, named so by the native Lenni Lenape people. Ever since, Manhattan has been steadily developed into one of the world’s most altered landscapes. Few vestiges remain of the forests, grasslands, wetlands, and streams that once combined to form a uniquely varied ecosystem on the island. Coinciding with the 400th anniversary of the arrival of Hudson, Wildlife Conservation ecologist Dr. Eric Sanderson has digitally established The “Mannahatta Project,” an educational program which aims to reconstruct what is known about the ecology of Manhattan as it existed before European settlement. The Mannahatta Project is sharing its results with the public via its website: www.themannahattaproject.org.

The NYU Native Woodland Garden in Schwartz Plaza, on the east face of NYU’s Bobst Library, will be the first planting to be done in association with the Mannahatta Project. The garden will feature a variety of plant species identified by Dr. Sanderson as likely to have been present on the day Henry Hudson first sailed by the island. Native trees, shrubs, and perennials will be planted among the existing non-native trees to mimic the natural process of ecological species succession. As stated by the garden designer Darrel Morrison in his design proposal, the design brings a “microcosmic and stylized version of the botanical diversity and aesthetic character of a native New York woodland into a highly urban environment.”

- George Reis, NYU Head Gardener

Purpose

This plant-guide is designed to be an educational resource and tool for students and the public seeking knowledge about the NYU Native Woodland Garden, or native gardens in general. It provides botanical facts as well as interesting facts about each plant located in the garden. Personal comments called “Notes from our Gardener” from the head gardener George Reis will accommodate some of the plants facts as well. Maps are provided for the reader to understand, identify, and locate the plants in the garden design. The guide is intended to evolve over time, with the hope of future students continuing work on native plants.

For the benefit of the reader, researcher, or curious mind, appendices can be found at the end of the guide. These include a list of all the plants found in the NYU Native Woodland Garden, a list of the New York City area nurseries that sell native plants, and possible research topics that can be derived from the NYU garden or native gardens in general.

People to Note

Darrel Morrison, FASLA, is the garden's designer. He is a professor and Dean Emeritus of the School of Environmental Design at the University of Georgia. He currently lives in New York City, and continues to teach, lecture, and practice ecologically-based landscape design and management. He is the recipient of the 2006 Landscape Designer Award of the American Horticultural Society.

George Reis is the head gardener and supervisor of sustainable landscapes for New York University. He came to NYU as a student to study Portuguese literature. After developing a fierce passion for gardening and taking classes at the New York Botanic Garden, George has helped to establish NYU’s gardens as a spectacular botanical oasis in the concrete jungle of New York City.

Mary Leou is the director of the Wallerstein Collaborative for Urban Environmental Education and the director of the Environmental Conservation Education Program in the Steinhardt School at NYU. It is with her guidance, support, and dedication to environmental education that this project could be created.

Robert Clark is the author of the plant-guide, and graduate of the NYU Steinhardt Graduate School in the Environmental Conservation Education program. He created the guide as an educational project coinciding with his internship with George Reis in helping to plant the Native Woodland Garden. He is interested in the use and implementation of native restoration education and other outdoor education methods in schools and environmental education programs.
ABOUT PLANTING NATIVES

Planting native species in an urban garden allows for a rare opportunity to provide essential ecological benefits, and at the same time create a beautiful green space. Natives promote biodiversity and help in flood control and erosion control. They offer the “advantage of lower maintenance, requiring supplemental watering only during the first year or two of establishment” (Reis, 2009). Planting natives also promotes the human action of helping to eradicate invasive species, the second most harmful cause of loss of biodiversity (the first is habitat loss) in the world, and the restoration of areas to their original or intended wild state.

TREES

The native woodland garden at Schwartz plaza plays host to two types of trees. One is an exotic Beech species that was unable to be removed from the garden. The other is a native called Serviceberry. The island of Manhattan was home to many species of trees, ranging from oak to cedar, hemlock to maple.

Shadbush Serviceberry (*Amelanchier canadensis*) Grows up to 20 feet and flowers in late March. They are considered a large deciduous shrub or tall tree. It contains red fruits that are edible and can be made into jams or pies. Native Americans dried the fruits and used it to flavor their meat.

![Shadbush Serviceberry](image1.jpg)

Figure 1 *Amelanchier canadensis* (courtesy of George Reis)

NATIVE GRASSES AND SEDGES (4)

In North America alone there are over 1,500 species of grasses, including sedges and rushes (Cullina, 2008). William Cullina states that “a garden without grasses is like a face without eyebrows” (Cullina, 2008). They are often grown and planted in clumps in gardens, and should be interspersed throughout different plants. In the Native Woodland Garden, four different species are found.

Bristle-leaf Sedge (*Carex eburnea*) Grows up to 1 foot and blooms and fruits June through August. Can increase diversity in urban environments, especially in filling in concrete and gravel spots. It grows primarily on ledges and bluffs.

![Bristle-leaf Sedge](image2.jpg)

Figure 2 *Carex eburnea* (copyright William Cullina)

Common or Wavy Hairgrass (*Deschampsia flexuosa*) Grows up to 3 feet, blooms and fruits June through August and prefers cool shady areas. It is an excellent habitat for birds to create nest sites and provides cover for many woodland creatures.

![Common or Wavy Hairgrass](image3.jpg)
Pennsylvania Sedge (*Carex pennsylvanica*) Grows up to 20 inches and blooms and fruits April through July. Provides habitat, cover, and food for some species of butterfly, birds, and other wildlife. It can be an important species for the restoration of woodland understories and holding soil. It is different from most ornamental sedges in that it flourishes in dry soil.

White Bear Sedge (*Carex albursina*) Grows up to 2 feet and blooms and fruits April through June. It can live in shade and can tolerate urban environments. The common name derives White Bear Lake in Minnesota.

**NATIVE FERNS (4)**

Ferns are beautiful, unique plants that harkens back to a distant, primordial past. Some species of ferns are almost 250 million years old. Ferns produce billions of single-celled spores that are carried on the wind, and can resemble many shapes and patterns once fully matured. There are four different species of ferns planted in the Native Woodland Garden.

**Christmas Fern** (*Polystichum acrostichoides*) Grows up to 3 feet and spores from May till October. It is an evergreen fern. The common name derives both from the fact that the plants were traditionally gathered for Christmas decorations, and that the each individual leaf sprout resembles a Christmas stocking.
Hayscented Fern (*Dennstaedtia punctilobula*) Grows up to 32 inches and spores from June till August. It will often sprout in sites that have been burned in the past. It grows in great gatherings and forms a “carpet” on the woodland floor. Its common name derives from the smell of newly-mown hay when the leaves are crushed.

![Figure 7 Dennstaedtia punctilobula (from www.mobot.org)](image)

Interrupted Fern (*Osmunda claytoniana*) Grows up to 3 feet and spores from May till June. The common name derives from the brown (fertile) leaflets that “interrupt” the green (infertile) leaflets found on the plant.

![Figure 8 Osmunda claytoniana (from www.ct-botanical-society.org)](image)

New York Fern (*Thelypteris noveboracensis* or *Parathelypteris noveboracensis*) Grows up to 18 inches and spores from June till October. Like Hayscented Fern, this species also “carpets” woodland floors. The name derives from the fact that it is native to New York. In addition, in the 18th and 19th centuries, New Yorkers were known to burn their candles from both ends. The New York Fern tapers at both ends, resembling the candles.

![Figure 9 Thelypteris noveboracensis (from www.ct-botanical-society.org, copyright Janet Novak)](image)

**NATIVE FORBS (23)**

A forb is another term for an herbaceous flower, or a wildflower. Thousands of species exist across the country and come in hundreds of colors, shapes, sizes, and forms. They have adapted over the millennia to specific areas and regions, and some breed in very exclusive zones. The following twenty-three forbs are native to New York and Manhattan.

Black Snakeroot, Black Cohosh, Bugbane (*Actaea racemosa* or *Cimicifuga racemosa*) Grows up to 7 feet and flowers from June till July. The name bugbane derives from the insect repelling smell of the plant, and cohosh is an Algonquin word meaning “rough.” The plant was used by Native Americans and still used today for the easement of menstrual pain and menopause.
Blue-stemmed Goldenrod or Wreath Goldenrod (*Solidago caesia*)
Grows up to 3 feet and flowers from August till October. Provides great habitat for some species of butterfly and bees.

*Notes from our Gardener* Goldenrod is often wrongly blamed for causing allergies because people mistake it for ragweed. This is the first year we’re planting Blue-stemmed Goldenrod, so I’m eager to see how it performs. We’ve planted *Solidago* “Fireworks” elsewhere on campus to very good effect.

Canada Mayflower or False Lily-of-the Valley (*Maianthemum canadense*)
Grows up to 8 inches and flowers from May till August. It is commonly seen as groundcover throughout New York City’s many forested parks and grows in large colonies.
Common Blue Violet (*Viola sororia*) Grows up to 6 inches and flowers from April till May. Its flowers and leaves are edible and it has had a history of being used medicinally. It is also the state flower of New Jersey, Rhode Island, Wisconsin, and Illinois.

*Notes from our Gardener* Because they’re so vigorous, native Violets are great groundcovers. They are very good for edging in containers and garden beds, but need to be kept in bounds as they tend to spread. *V. pedata*, Bird’s Foot Violet, another native violet, is much better behaved for more formal settings. Labrador Violet, *V. labradorica* is another native violet I like very much.

![Figure 15](https://www.ct-botanical-society.org, copyright Janet Novak)

**Figure 15** *Viola sororia* (from www.ct-botanical-society.org, copyright Janet Novak)

Dutchman’s Breeches (*Dicentra cucullaria*) Grows up to 6 inches and flowers from April till May. The common name derives from the flowers’ shape, which looks like white breeches or pantaloons.

![Figure 16](https://www.ct-botanical-society.org, copyright Eleanor Saulus)

**Figure 16** *Dicentra cucullaria* (from www.ct-botanical-society.org, copyright Eleanor Saulus)

Early Meadow Rue (*Thalictrum dioicum*) Grows up to 28 inches and flowers from April till May. The species name dioicum refers to the plant being dioecious. This means that male flowers and female flowers are located on different plants. Most animal species are dioecious.

![Figure 17](https://grandmorainegrowers.ca)

**Figure 17** *Thalictrum dioicum* (from grandmorainegrowers.ca)

Flowering Spurge (*Euphorbia corollata*) Grows up to 40 inches and flowers from June till October. It can endure partial shade but prefers open spaces in fields and meadows.

![Figure 18](https://www.hiddensavanna.com)

**Figure 18** *Euphorbia corollata* (from www.hiddensavanna.com)

Foamflower (*Tiarella cordifolia*) Grows up to 1 foot and flowers in May. It thrives in shade and is typically found north of New York City.

*Notes from our Gardener* This is one of my favorite groundcover plants for shade. The wispy flowers combine to form an ethereal effect of a
white or pinkish cloud hovering over the foliage in spring, shows why it’s name is so appropriate. While we are using the “straight” species in our Native Woodland Garden, there now exist many cultivars of Foam Flower in a variety of foliage colors and shapes. A friend of mine laughed at me for buying what she called a “weed” in the woods near her home in Vermont. I remind her that every plant started as a weed somewhere, and that a plant tough enough to fend for itself in the wild deserves a chance in the city garden too.

![Tiarilla cordifolia](from www.mobot.org)

**Figure 19** Tiarilla cordifolia (from www.mobot.org)

**Mayapple (Podophyllum peltatum)** Grows up to 20 inches and flowers from May till June. The leaves form an “umbrella,” often covering the flowers underneath. The ripened fruit (mayapple) is edible, and is frequently eaten by box turtles and small animals. Unripe fruit and all other parts are poisonous.

![Podophyllum peltatum](from mobot.org)

**Figure 20** Podophyllum peltatum (from mobot.org)

**Partridge Berry or Partridgeberry (Mitchella repens)** Grows up to 8 inches and flowers from June till July. It is food for birds and small mammals, and is not a common plant found in New York City. The genus name derives from a botanist named John Mitchell who lived in Philadelphia during the 18th century and discovered the plant.

![Mitchella repens](from www.ct-botanical-society.org, copyright Eleanor Saulys)

**Figure 21** Mitchella repens (from www.ct-botanical-society.org, copyright Eleanor Saulys)

**Rue Anemone (Thalictrum thalictroides)** Grows up to 8 inches and flowers March through May. The leaves have three lobes that resemble mittens. The name anemone comes from the Greek, which roughly translated means “wind flower.”

![Thalictrum thalictroides](www.delawarewildflowers.org)

**Figure 22** Thalictrum thalictroides (www.delawarewildflowers.org)

**Smooth Solomon’s-seal (Polygonatum biflorum)** Grows up to 4 feet and flowers from May till June. There is debate as to the meaning of the common name. The two derivations come from circular shapes on the rhizomes (tubers), and from the possible healing effects of the plant. There is a similar species called Great or Giant Solomon’s-seal, but it is still unclear if it is its own species or a variation of Smooth Solomon’s-seal.
Solomon’s-plume or False Solomon’s-seal (*Maianthemum racemosum*) Grows up to 3 feet and flowers from May till June. It is a similar species to Solomon’s-seal except for its flowers.

Turk’s Cap Lily (*Lilium superbum*) Grows up to 6 feet and flowers from July till August. The bulbs are susceptible to damage from small rodents in open areas. The common name derives from the orange sepals and pedals, which curve backwards to a point on the stem to form what resembles an early Turkish cap.

*Notes from our Gardener* One of the easiest lilies to grow, the orange to red-orange flower put on a great show in summer. A single, large plant can display as many as 30 flowers. It grows well in sun or part sun in a large container or garden bed.

Stout Blue-eyed Grass (*Sisyrinchium angustifolium*) Grows up to 20 inches and flowers from July till August. It is not actually a grass, rather it is part of the iris family.

*Notes from our Gardener* Blue-eyed grass is one of my favorite plants we started using this year on campus. It has thin, grass-like foliage and produces a lovely blue flower in late spring and early summer. The foliage continues through summer and into fall. We stored some leftover plants this spring in an area that only received moderate sun during the day, and this plant continued blooming for weeks. This plant will self-sow and form a nice dense colony. If you don’t want it to self-sow, deadhead the plant before it sets seed.
**White Wood Aster** (*Eurybia divaricata* or *Aster divaricata*) Grows up to 3 feet and flowers from August till October. It is a hardy, tolerant species capable of growing in disturbed urban habitats. Attracts butterflies and insects.

*Notes from our Gardener* Depending on whom you ask, this is either a weed or a venerable woodland native. Either way, it’s a tough, carefree plant that produces many white flowers in fall. In sun or shade, moist or dry soil, this plant is never choosy. The white flowers brighten up a shady spot in a container or garden bed. Give it a trim after it blooms if you don’t want it to self-sow.

![Figure 27 Eurybia divaricata or Aster divaricata (from www.wildflower.org, copyright Stefan Bloodworth)](image)

**Wild Blue Phlox** (*Phlox divaricata*) Grows up to 20 inches and flowers from May till June. Phlox is a Latin derivative of the Greek word for “flame.”

*Notes from our Gardener* William Cullina, the leading expert on native plants of the northeast, calls Blue Phlox “an indispensable spring ephemeral for eastern shade gardeners.” Violet or lavender blue flowers appear in early spring. Cullina recommends pairing it with *P. stolonifera* for a succession of bloom. It will self sow and spread if not deadheaded and is great for edging in containers or garden beds.

**Wild Columbine (Red)** (*Aquilegia canadensis*) Grows up to 18 inches, flowers April through June, and prefers rocky woods and slopes. It is attractive to several hummingbird species.

![Figure 28 Phlox divaricata (from www.monchesfarm.com)](image)

**Wild Geranium** (*Geranium maculatum*) Grows up to 22 inches and flowers from April till June. The white to pinkish-purple flowers attract some species of butterfly. Geranium is a Greek word meaning “crane,” and the seed pods of the plant are shaped like a crane’s bill. An old informal term for the plant is Old Maid’s Nightcap.

*Notes from our Gardener* Pink or white, this adaptable plant likes to live in moist woodlands. It especially likes a moist spring when it blooms and then goes dormant after setting its seeds. Not to be confused with the sometimes garish colored garden variety geraniums, this native has a more subtle look as it flowers for several weeks in spring.
Wild Ginger (*Asarum canadense*) Grows up to 8 inches and flowers April through May. It slowly forms colonies over time. The roots have a similar smell to that of ginger used in cooking, the Native Americans used the plant medicinally for digestive problems and as a stimulant.

Yellow Forest Violet or Downy Yellow Violet (*Viola pubescens*) Grows up to 18 inches and flowers from April till May. It is a habitat for some butterfly species and bees. The flowers and leaves both grow from the stem. The word pubescens is Latin for “downy.”

*Notes from our Gardener* Because they’re so vigorous, native Violets are great groundcovers. They are very good for edging in containers and garden beds, but need to be kept in bounds as they tend to spread. *V. pedata*, Bird’s Foot Violet, another native violet, is much better behaved for more formal settings. Labrador Violet, *V. labradorica* is another native violet I like very much.

Wild Sarsaparilla (*Aralia nudicaulis*) Grows up to 15 inches and flowers May through June. It is a very common species in Eastern woodland forests, and its black berries provide food for birds and small mammals. It is sometimes confused with poison ivy due to it having groups of 3 leaflets, and its roots have medicinal properties.
APPENDICES

Schwartz Plaza Garden Maps & Plant Identifier

The following diagrams are copies of the original garden design created by Darrell Morrison. Figure 34 represents the south garden area. This section is separated from the west area, adjacent to West 3rd Street. Figures 36 and 37 represent the west area of the garden. This long garden is one continuous piece, but for the purpose of this plant-guide it has been divided in half. Figure 35 represents the key to the plants located on the design maps, as well as the total number of specific plants.

![Figure 34 South Section Garden]

![Figure 35 Garden Design Key]
Figure 36 West Side Section A

Figure 37 West Side Section B
Possible Research Topics

The following are a list of topics where further research in native plant science and education can take place. This list is intended to be an educational guide in the hopes that students or the public should want to further their knowledge in this important field. Included in the list are possible assignments that classes or individuals can participate in as well.

1. Optimal soil conditions for an urban woodland garden.
2. Ways to measure how different native species perform in an urban setting.
3. Identifying the unique stresses on plants in an urban setting and how these stresses can inhibit plant growth.
4. The human wellness benefits of regular contact with urban gardens.
5. The role of mycorrhizal fungi in suppressing plant diseases and promoting plant health.
6. The ways woodland plants interact with each other in nature.
7. How plant-to-plant relationships in a natural woodland can be encouraged and re-created in an urban setting.
8. How to encourage the growth of mycorrhizal fungi in an urban garden.
9. The cultural requirements of the plant species chosen for the native woodland garden design.
10. The ecological benefits of native woodland plantings in urban areas.
11. The potential of native plant species for phytoremediation of disturbed urban sites.
12. Ways to evaluate the health of trees.
13. Native woodland garden maintenance methods.
15. The Native Flora Garden of the Brooklyn Botanic Garden.
16. The native gardens of Stuyvesant Cove Park in Manhattan.
17. The Battery Conservancy’s native meadow planted by the Boys’ and Girls’ Clubs of the Lower East Side.

Outdoor Assignments
1. Collecting soil samples and interpreting soil lab test results
2. Documenting current conditions of planting areas with photos.
3. Removing and transplanting non-native plants
4. Adding organic matter to planting areas to increase soil fertility.
5. Identifying the different microclimates in the plaza.

New York City Area Native Plant Nurseries

The following is a list of recommended nurseries in the NYC metropolitan area that sells native plants. This is intended to be a tool for those readers who are interested in planting their own native garden.

Atlantic Nurseries
250 Atlantic Avenue
Dix Hills, NY 11520
Phone: (516) 586-6242

Fort Pond Native Plant Nursery
26 S. Embsay Street
Montauk, NY 11954
Phone: (631) 668 6452
Fax: (631) 668 6439
(www.nativeplants.net)

Southern Tier Consulting, Inc.
2701-A Route 305, P.O.Box 30
West Clarksville, NY 14786
Phone: 716-968-3120
Fax: 716-968-3122

Staten Island Greenbelt
Native Plant Center
3808 Victory Blvd.
Staten Island, NY 10314
Phone: (718) 370-9044
FAX: (718) 370-0932

Arrowwood Nurseries Inc.
PO Box 418C Malaga Road
Williamstown, NJ 08094
Phone: (609) 875-4889
FAX: (609) 753-1285
NYU Schwartz Plaza Native Woodland Garden Plant List

Trees
Amelanchier canadensis  Serviceberry
Fagus grandifolia  American Beech

Grasses, Sedges
Carex alburna  White Bear Sedge
Carex eburnea  Bristle-leaf Sedge
Carex pennsylvanica  Pennsylvania Sedge
Deschampsia flexuosa  Common Hairgrass

Ferns
Dennstaedtia punctilobula  Haysented Fern
Osmunda claytoniana  Interrupted Fern
Polystichum acrostichoides  Christmas Fern
Thelypteris noveboracensis  New York Fern

Forbs
Aquilegia canadensis  Wild Columbine
Aralia nudicaulis  Wild Sarsaparilla
Asarum canadense  Wild Ginger
Enothera corollata  Flowering Spurge
Eurybia divaricata or (Aster divaricata)  White Wood Aster
Gallophtyllum thalictroides  Blue Cohosh
Cimicifuga racemosa  Black Snakeroad
Dicentra cucullaria  Dutchman's Breeches
Gernium maculatum  Wild Geranium
Lilium superbum  Turk's Cap Lily
Maianthemum canadense  Wild Lilly of the Valley
Maianthemum racemosum  Feathery False Lily of the Valley
Mitchella repens  Partridgeberry
Phlox divaricata  Blue Phlox
Podophyllum peltatum  Mayapple
Polygonatum biflorum  Solomon's Seal
Sanguinaria canadensis  Bloodroot
Sisyrinchium angustifolium  Blue-eyed Grass
Thalictrum thalictroides  Rue Anemone

Solidago caesia  Blue-stemmed Goldenrod
Thalictrum dioicum  Early Meadow Rue
Tiarella cordifolia  Foam Flower
Viola sororia  Common Violet
Viola pubescens  Yellow Forest Violet

Video
This website link refers to a video of Darrell Morrison speaking about the Native Woodland Garden.
http://www.youtube.com/watch?v=E7DGNKVTTRo

References


Images were found at:
http://grandmorainegrowers.ca
http://museum.gov.ns.ca
http://williamcullina.com/Page58.html
http://www.anniesannuals.com
http://www.awaytogarden.com
http://www.ct-botanical-society.org/
http://www.delawarewildflowers.org
http://www.hiddensavanna.com
http://www.illinoiswildflowers.info
http://www.mobot.org/
http://www.monchesfarm.com
http://www.ncwildflower.org
http://www.nps.gov
http://www.prairiemoon.com
http://www.wildflower.org

Figure 38 Courtesy of George Reis

Figure 39 Courtesy of George Reis